

### REMARKS

This paper is responsive to an Office Action dated September 17, 2003. Prior to this amendment claims 1-8 and 20 were pending. Claims 9-19 were previously withdrawn, without traverse, in response to an election requirement. After amending claims 1, 4-6, and 20, and adding claims 21-23, claims 1-8 and 20-23 remain pending.

The Office Action states that claims 1-2 have been rejected under 35 U.S.C. 102(b) as being anticipated by Degendt et al. ("Degendt"; US 2002/0088478). The Office Action states that Degendt describes a process of forming an electrode layer and an overlying a resin residue [0008], introducing a gas mixture including ozone into water [0055]. With respect to claim 2, the Office Action states that Degendt describes a patterned resin interlayer [0068] and a via formed in the resin residue [0066]. This rejection is traversed as follows.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Degendt describes a ozone gasphase process [0055]. A liquid (DI water and an additive) are added to a container in sufficient quantity to cover an ozone diffuser. The wafers are not immersed in the liquid. "At all time (sic) the ozone is bubbled directly into the liquid (no bubble reduction) throughout the experiment." Thus, Degendt describes a variation of a dissolved ozone process. The reference explained in

Degendt's Background Section uses a similar dissolved ozone process [0012].

The invention of claim 1, however, uses a "moist ozone gas". A moist ozone gas is defined in the present invention specification as a process where ozone is blown in a thin sheet of water, where the water sheet covers the surface being cleaned (page 8, ln. 1-13). Two methods of forming the sheet of water are described, they are the subject matter of new claims 21-23. Further, the present invention describes the use of the moist ozone gas process, as compared to a dissolved ozone process (page 7, ln. 11-26).

To further clarify the distinctions between Degendt and the claimed invention, claim 1 has been amended to directly incorporate the above-mentioned definition of moist ozone gas. Degendt does not describe all the limitations of claim 1. Specifically, Degendt does not teach the claimed invention's use of a moist ozone gas process, where a sheet of water is formed on the surface to be cleaned and an ozone gas is blown into the water. Since Degendt does not describe every feature of the claimed invention, it cannot anticipate. Claim 2, dependent from claim 1, enjoys the same distinctions over the cited reference and the Applicant requests that the rejection be removed.

The Office Action has rejected claims 1-2 and 4-5 as unpatentable under 35 U.S.C. 103(a) with respect Degendt. The Office Action acknowledges that Degendt does not describe a concentration, but that it would have been obvious to one skilled in the art to optimize the process. With respect to claim 5, the Office Action states that it would have been obvious to optimize the temperature. This rejection is traversed as follows.

An invention is unpatentable if the differences between it and the prior art would have been obvious at the time of the invention. As stated in MPEP § 2143, there are three requirements to establish a *prima facie* case of obviousness.

First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaack* 947 F.2d 488, 20 USPQ2d, 1438 (Fed. Cir. 1991).

In accordance with the above-stated first *prima facie* requirement, the reference itself must suggest a reason to modify a reference, or the knowledge generally available must provide a motivation to modify the reference in such a way as to make the claimed invention obvious. DegenDt describes a dissolved ozone process that appears to be building upon the US 5,464,480 reference [0012], which was incorporated by reference. DegenDt does not describe any process for the introduction of ozone other than dissolution in a liquid. DegenDt does not teach an alternate process ozone introduction process, or teach that an alternate process might be preferred. Thus, there is no suggestion that DegenDt's dissolved ozone process be modified in such a way as to suggest the claimed invention moist ozone gas process.

Further, the Office Action has not demonstrated that the modification of the cited the prior art reference points to the reasonable expectation of success in the present invention, which is the second

requirement of the obviousness analysis. That is, the Degendt patent does not point to a process that blows ozone into a thin sheet of water overlying the substrate surface to be cleaned.

The third requirement to support a *prima facie* case of obviousness requires that the reference disclose all the elements of the claimed invention. As noted above in response to the anticipation rejection, Degendt does not teach the claimed invention's use of a moist ozone gas, where a sheet of water is formed on the surface to be cleaned and an ozone gas is blown into the water. Rather Degendt teaches a process where the substrate is suspended over a liquid into which ozone has been dissolved. Degendt neither suggests, nor recites all the elements of claim 1. Claims 2 and 4-5, dependent upon claim 1 enjoy the same distinctions from the cited reference, and the Examiner is requested to withdraw the rejection.

The Office Action has rejected claims 1-8 and 20 as unpatentable under 35 U.S.C. 103(a) with respect to Degendt in view of the admitted prior art (APA). The Office Action acknowledges that the APA fails to teach a process to clean vias, but that Degendt describes a moist ozone gas process useful after a via etching process. The Office Action further states that it would have been obvious to one skilled in the art to combine the two references. This rejection is traversed as follows.

The APA discusses an O<sub>2</sub> dry etch process to remove resin residue after a conventional photoresist etching operation (page 2, ln. 1-14). The APA also describes a CF<sub>4</sub> + O<sub>2</sub> plasma etching process. To make a case that there is motivation for the combination of the APA and Degendt in a way that makes the claimed invention obvious, a rationale must be presented as to how a dissolved ozone process can suggest a moist

ozone gas process (as defined by the claimed invention). As noted above in response to the first obviousness rejection, Degendt does not suggest the moist ozone gas process. Neither does the combination of the APA, with Degendt, suggest a motivation to change Degendt's ozone gasphase process into a moist ozone gas process.

Again, the Office Action has not demonstrated that the modification of the combined prior art reference points to the reasonable expectation of success in the present invention, which is the second requirement of the obviousness analysis.

The third requirement to support a *prima facie* case of obviousness requires that the combined references disclose all the elements of the claimed invention. The two cited references, even when combined, do not teach the claimed invention's use of a moist ozone gas, where a sheet of water is formed on the surface to be cleaned and an ozone gas is blown into the water. The combination of references neither suggests, nor recites all the elements of claims 1 and 20. Claims 2-8, dependent upon claim 1, enjoy the same distinctions from the cited reference, and the Applicant requests that the rejection be withdrawn.

It is believed that the application is in condition for allowance and reconsideration is earnestly solicited.

Respectfully submitted,

Date:

10/20/03

David Ripma  
Registration No. 27,672

OFFICIAL

RECEIVED  
CENTRAL FAX CENTER  
OCT 21 2003

David Ripma, Patent Counsel  
Sharp Laboratories of America, Inc.  
5750 NW Pacific Rim Blvd.  
Camas, WA 98607  
Telephone: (360) 834-8754  
Facsimile: (360) 817-8505  
[dripma@sharplabs.com](mailto:dripma@sharplabs.com)